6. Watershed Improvement Projects

One of the primary objectives for Chesapeake Forest Lands is to ensure that clean water flows out of the forest, which in turn will help to improve water quality flowing to the Chesapeake Bay. In addition, Chesapeake Forest provides opportunities to improve water quality with its connectivity to other land uses, such as agricultural land or developed land, that generally produce greater amounts of nutrients, sediments, and other substances that can harm aquatic ecosystems. By restoring altered stream and wetland hydrology, re-establishing connections between streams and floodplains, and enhancing stream habitat, pollutants can be filtered before entering downstream aquatic systems.

Watershed Improvement Project Evaluation Process

- A Watershed Improvement Project (WIP) evaluation process was developed to identify specific locations and features within Chesapeake Forest that potentially provide opportunities for watershed improvement. This process consists of the following steps:
- A preliminary analysis was done through reviewing 1999 aerial photographs and tract maps, along with GIS maps of streams, ditches, and wet areas. This evaluation resulted in an identification of potential watershed improvement projects and their location.
- A group of resource professionals with expertise in the area of watershed improvement and wetland creation was developed to evaluate the feasibility of potential watershed improvement projects.
- Using the preliminary list of projects as a guide, this group has been conducting field reviews to determine if and what type of watershed improvement project is feasible. Factors such as the effect on neighboring properties, soil type, topography, and access are considered in this evaluation.
- If the field review determines that a project warrants further consideration demonstrates merit, a conceptual design is developed for review by the interdisciplinary (ID) team as part of the Annual Work Plan process or, if necessary, as a separate review.
- If the ID team is supportive of the concept, a detailed design is developed and reviewed by the ID team.
- Following this approval, permits and funding are secured and the project is implemented.

Watershed Improvement Practices

- The following practices will be the primary watershed improvement techniques used to enhance pollutant removal capabilities and improve aquatic habitat on the Chesapeake Forest Project lands:
- Low berm – a low earthen berm constructed across a ditch to restore or enhance natural hydrology in order to maximize water detention time thereby increasing the retention of sediment, wetland diversity, and denitrification. Low berms will be targeted for forest ditches with connections to existing stream or wetland systems and ag/dev ditches. In order to hold water, the berms must be constructed of fine-grained material and therefore will be limited to Soil Management Groups 1 and 2.
- Ditch plug – where ditches exist in coarse grained material, ditch plugs can be constructed by collapsing ditch banks and filling the ditch with the excavated material. The ditch plug will restore the natural hydrology to the area increasing the time and

frequency of saturation and reducing flow velocity. This will increase denitrification and the retention of sediment as well as increase vernal pools. Ditch plugs will be constructed on forest ditches with connections to existing stream or wetland systems and ag/dev ditches.

- Woody debris – In channelized streams lacking sufficient woody debris, root-wads, tree trunks and large limbs may be added to increase structural diversity to enhance aquatic habitat and to provide opportunities for the retention of sediment.
- Riparian planting – where adequate riparian vegetation or diversity of understory species does not exist along streams, native riparian communities will be established to improve in-stream habitat, to stabilize stream banks and to increase surface roughness to encourage sedimentation.
- Stormwater wetland – an excavated area adjacent to channelized streams into which stormflows are directed by a flow splitter or a diversion structure. The purpose of the stormwater wetland is to retain stormwater flows to encourage the retention of sediment, plant uptake, and denitrification, as well as create wetland habitat. Excavation activities will be coordinated with harvesting and thinning operations to avoid unnecessary clearing. The stormwater wetlands will be designed to hold stormwater flows without affecting overall discharge rates or upstream drainage. A key consideration in the planning of stormwater wetlands is proper disposal of the excavated material.
- Water control structure – a structure place in a channelized stream or ditch to impound water to a certain height and then release it downstream. Installation of water control structures in entrenched streams and ditches will create pools to encourage the retention of sediment and denitrification. Water control structures will be used in selective occasions as a last resort and only under appropriate circumstances.

Interim Watershed Improvement Projects

As part of the effort to improve water quality and aquatic habitat during the period while this plan was developed, the evaluation process was followed and resulted in the identification of several feasible projects as well as a number of potential projects not worth further consideration at this time. These are identified in the chart below:

All of the feasible projects are located on property formerly owned by Chesapeake Forest Products, Inc and recently acquired by the Maryland Department of Natural Resources. The restoration work proposed herein involves the restoration of former wetland areas, the enhancement of existing wetland and stream restoration. This will be accomplished by reestablishing and enhancing, wetland and stream function. The primary goal of each of these projects is to improve the quality of waters leaving Chesapeake Forest Land property. The secondary goal of these projects is to enhance wildlife habitat.

Specific Project Descriptions

Morris Millwork - The site (approximately 20 acres) is bisected by a man-made ditch, which runs in a westerly direction and eventually flows into Leonard's Mill Pond and then to the Wicomico River. The area where the work is scheduled to take place is currently planted in loblolly pine (about 7 - 8 years old). Soils at the site consist primarily of Portsmith Sandy Loam. The Portsmith soil series is very poorly drained loamy sands. Work at the site will consist of a series of ditch plugs with will impede the

flow of water through the existing ditch. In addition, a low level berm will be constructed at the western edge of the project site to further increase the hydroperiod at the site.

Estimated Total Project Cost: 26,500

Puckum Branch - Puckum Branch is a 4-mile long stream which runs in a westerly direction from its headwaters near Finchville, Maryland to the Marshy Hope Creek. Much of the stream has been ditched and/or channelized, particularly in the headwater areas. The watershed (approximately 1,250 acres) consists of an almost even mix of forest and agricultural fields. The project area is located just west of where the stream intersects with Puckum Road. The channelized stream runs through a forested floodplain. The channelization widened and deepened the stream which resulted in less frequent flooding of the adjacent floodplain The proposed project is located along 2,000 feet of this portion of Puckum Branch. The proposed work consists of installing biologs and other natural materials in the stream to reduce the capacity and encourage more frequent contact with the adjacent floodplain. Once implemented, this project will enhance stream/floodplain interaction and result in improved habitat and enhanced water quality.

Estimated Total Project Cost: $41,000

Jones Tract – This is the restoration of 48 acres of wetlands northwest of Libertytown, Maryland along Purnell Crossing Road in Worcester County. The site is predominantly forested however; it also includes some agricultural land and cut over timber. The site has been hydrologically altered by the installation of drainage ditches. Restoration of the site will consist of the plugging of ditches, the installation of a low level berm and some shallow excavation.

Estimated Total Project Cost: $56,000

Dunn Swamp – This site is located along Hillman Road approximately 2 miles southwest of Pocomoke City. The site is actually a portion (20 acres) of a larger agricultural field (88 acres). The site is bisected by a drainage ditch, which will be plugged as a part of the project. Soils at the site consist primarily of Fallsington soils with some Woodstown soils on the fringe of the project area. Planned work at the site includes the plugging of the existing ditch, the installation of a low level berm and some minor excavation. It is intended that this site will be reforested with native atlantic white cedar and associated vegetative allies.

Estimated Total Project Cost: $23,500

Pepperfields – This is a forested 100-acre site that has been hydrologically altered by the installation of a ditch. This ditch, commonly known as Rayfield Ditch drains approximately 585 acres of forest and farmland. Soils in the affected area consist primarily of Fallsington and Pocomoke soils. The project will consist of the installation of ditch plugs to retard the conveyance of water off-site and increase retention in the adjacent forested area.

Estimated Total Project Cost: $41,000

Table 18 — Project Status

Project	NEPA Review	Survey	Design	MDE/USCOE Permit	Begin Construction
Morris Millwork	Submitted	Completed	In Design	Not submitted	June 2005
Puckum Branch	Submitted	Completed	In Design	Issued	October 2004
Jones Tract	Completed	Completed	Completed	Issued	April 2005
Dunn Swamp	Not submitted	Completed	In Design	Not submitted	June 2005
Pepperfield	Not submitted	Start 11/03	Not Started	Not submitted	August 2005

Funding

Funding for implementation of the watershed improvement projects will come in part from the operational budget (See Chapter 11) for the Chesapeake Forest Project, but other sources of funding will also be pursued, including government cost share programs and grants. In implementing and funding the watershed improvement projects, the Land Manager will coordinate with other appropriate DNR divisions, government agencies, and organizations involved in wetland and riparian restoration.

7. Water Resources – Human Consumption

The Department recognizes that while water is the keystone of healthy natural ecosystems, it also contributes to the economic prosperity and social stability of human communities. Based on this recognition, the Department is currently developing a policy on leasing State-owned water resources. This policy will address municipal, agricultural and recreational uses for water withdrawn from State land, and should be followed when considering such requested uses of water withdrawal from Chesapeake Forest land.